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Abstract

PURPOSE: To avoid a thermal deformation and to form an optical guide layer thereon while maintaining the height of a protrusionlike diffraction grating provided on a substrate at a predetermined value by vapor growing at a low temperature by an atomic layer epitaxial growth (ALE) method.

CONSTITUTION: Part 31 of an InGaAsP layer for forming an optical guide layer 3 is formed on an InP substrate 1 provided with a diffraction grating 2, the grating 2 is covered therewith, and the residue 32 of the layer 3, an active layer 4 and a clad layer 5 are then sequentially formed by a normal MOVPE method. The grating 2 is not thermally deformed at 400 deg.C, and not thermally deformed at 400-650 deg.C after it is covered with an InGaAsP layer 31. Accordingly, the grating can preserve a predetermined height of the state provided initially on the substrate. The residue 32 of the layer and the other layer 4, the layer 5, etc., are formed by a normal MOVPE method.